Claims:

1. An organic solvent extraction mixture for the separation and purification of base metals from weakly acidic sulphate solutions which includes:

a. a first extractant, which is a substituted imidazole (Diagram 1) or benzimidazole (Diagram 2)

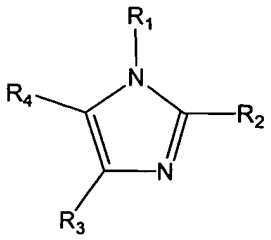

Diagram 1

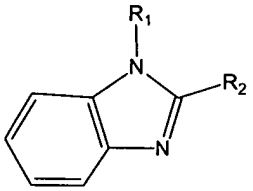

Diagram 2

and wherein the substituents are:

- R_1 = an organic group which has between 2 and 20 carbon atoms;
- R_3 = a hydrogen atom or a short chain organic group with 1 or 2 carbon atoms;
- R_4 = a hydrogen atom or a short chain organic group with 1 or 2 carbon atoms;
- R_2 is a -methylene-1-pyrazole group, an imidazole based group, or a methylene-amino group as shown in Diagram 3

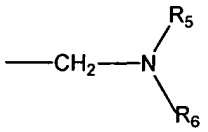

Diagram 3

and wherein

- R_5 = a hydrogen or a methyl group;
- R_6 = a hydrogen or an aliphatic group containing between one and 10 carbon atoms; or
- R_6 = a methylene-amino group with one of the substituents being a hydrogen or a methyl group and the other a hydrogen or an aliphatic group containing between one and 10 carbon atoms; or
- R_6 = a -2-pyridine group, or

R_6 = a -methylene-1-pyrazole group, or

R_6 = a 2-methyl imidazole based group;

b. a second extractant which includes a non-selective strongly acidic sulphonic acid;

c. a modifier which is characterized by the presence of a sterically available oxygen or nitrogen atom with lone pairs of electrons; and

d. a diluent.

2. A mixture according to claim 1 wherein $-R_6$ is a methylene-amino group as shown in Diagram 3.

3. A mixture according to claim 1 wherein the concentration of the first extractant is between 0.01 and 1.50 Molar.

4. A mixture according to claim 1 wherein the second extractant is a sulphonic acid ($R\text{-}SO_3H$) and wherein R is an aliphatic group, an aromatic organic group or a mixed group consisting of aliphatic and aromatic parts, with between 3 and 40 carbon atoms.

5. A mixture according to claim 1 wherein the second extractant is selected from di-nonyl naphthalene sulphonic acid (DNNS), di-dodecyl naphthalene sulphonic acid, di-n-octyl methyl sulphonic acid and an alkyl substituted benzene sulphonic acid.

6. A mixture according to claim 4 wherein the concentration of the second extractant is between 0.001 to 1.0 Molar sulphonic acid.

7. A mixture according to claim 1 wherein the concentration of the modifier is between 10% and 70% of the mixture.

8. A mixture according to claim 1 wherein the diluent is selected from an aliphatic, aromatic or aliphatic aromatic mixture.

9. Use of the mixture of claim 1 which is carried out in the temperature range between 10°C and 70°C and a pH between 0 and 6.0.

10. Use according to claim 9 for the treatment of an aqueous pregnant feed solution.